Training Course on Human Factors in Process Safety

Professional Development Training Course Outline

Category	Oil and Gas	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's dynamic industrial landscape, Human Factors in Process Safety has become a critical domain influencing operational excellence, regulatory compliance, and accident prevention. Training Course on Human Factors in Process Safety addresses the interaction between humans, systems, and the working environment to reduce errors, improve safety culture, and enhance performance reliability in high-risk industries such as oil & gas, chemicals, manufacturing, and energy.

As the demand for safety-centric design, human reliability, and risk management intensifies, understanding and applying Human Factors is no longer optional—it's essential. This course empowers professionals with proactive safety strategies, real-world case studies, and human-centered design principles to eliminate latent risks and improve incident response through better decision-making and behavioral safety improvements.

Programme Curriculum

Training Course on Human Factors in Process Safety

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Course Objectives

1. Understand the core principles of human factors engineering in process safety.
2. Identify human error types and their impact on operational risks.
3. Analyze the influence of workplace culture and leadership behavior on safety outcomes.
4. Apply ergonomic design to enhance operator performance and minimize errors.
5. Examine cognitive biases and their role in safety-critical decision-making.
6. Implement effective communication frameworks in hazardous environments.
7. Evaluate fatigue risk management systems (FRMS) to mitigate operator fatigue.
8. Integrate human reliability analysis (HRA) techniques in risk assessments.
9. Recognize the role of human-machine interaction (HMI) in modern process safety.
10. Design safety-critical task procedures with human factors in mind.
11. Assess organizational influences on individual performance and system vulnerabilities.
12. Use learning from incidents (LFI) to drive safety improvements.
13. Develop a comprehensive safety management system (SMS) with human factors at its core.

Target Audiences:

1. Process Safety Engineers
2. HSE Managers and Supervisors
3. Operations and Maintenance Personnel
4. Risk Assessment Specialists
5. Control Room Operators
6. Chemical and Mechanical Engineers
7. Regulatory Compliance Officers
8. Industrial Safety Consultants

Course Duration: 5 days

Course Modules

Module 1: Fundamentals of Human Factors in Process Safety

- Introduction to Human Factors and Process Safety Integration
- Safety Culture and Organizational Behavior
- Systems Thinking in Process Safety
- Swiss Cheese Model of Accident Causation

- Understanding Latent and Active Failures
- **Case Study:** BP Texas City Refinery Explosion

Module 2: Human Error and Decision-Making in High-Risk Environments

- Types of Human Errors: Slips, Lapses, Mistakes, and Violations
- Cognitive Load and Situational Awareness
- Factors Influencing Decision-Making Under Pressure
- Tools for Human Error Identification
- Mitigating Errors Through Engineering Controls
- **Case Study:** Fukushima Nuclear Disaster

Module 3: Ergonomics and Human-Machine Interface Design

- Introduction to Industrial Ergonomics
- Control Room Design Standards
- Human-Machine Interface (HMI) Design Principles
- Display and Control Device Optimization
- Preventing Musculoskeletal and Cognitive Strain
- **Case Study:** Three Mile Island Control Room Incident

Module 4: Human Reliability and Task Analysis

- Human Reliability Analysis (HRA) Techniques
- Safety-Critical Task Identification
- Task and Job Hazard Analysis
- Procedural Design with Human Limits in Mind
- Checklists, Job Aids, and Work Instructions
- **Case Study:** NASA Challenger Disaster

Module 5: Fatigue Management and Shift Work Risks

- Causes and Consequences of Fatigue
- Fatigue Risk Management Systems (FRMS)
- Designing Rotational Shift Schedules
- Sleep Hygiene and Alertness Tools
- Monitoring and Managing Operator Fatigue
- **Case Study:** Exxon Valdez Oil Spill

Module 6: Effective Communication and Team Coordination

- Communication Models in High-Risk Settings
- Importance of Briefings and Shift Handover
- Team Resource Management (TRM) and Crew Coordination
- Active Listening and Closed-Loop Communication
- Conflict Resolution in Safety-Critical Scenarios
- **Case Study:** Tenerife Airport Disaster

Module 7: Leadership, Behavior, and Organizational Culture

- Role of Leadership in Promoting Safety Culture
- Behavioral Safety Programs and Implementation
- Motivating Safe Behaviors Through Reinforcement
- Reporting Systems and Psychological Safety
- Building a Resilient and Just Culture
- **Case Study:** Deepwater Horizon Explosion

Module 8: Incident Investigation and Learning from Human Error

- Techniques for Root Cause and Human Factors Analysis
- Learning from Incidents (LFI) Frameworks
- Event Tree and Fault Tree Analysis with Human Factors
- Reporting Near Misses and Learning Opportunities
- Creating and Disseminating Safety Alerts
- **Case Study:** Bhopal Gas Tragedy

Training Methodology:

- Interactive lectures with real-world examples
- Simulation-based case studies and scenario analysis
- Group workshops and brainstorming activities
- Video demonstrations and ergonomic assessments
- Peer reviews and group discussions
- Hands-on application of tools and templates

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com